

REMARKS

Pursuant to Applicant's election of Claims 1-47 for prosecution, responsive to Examiner's restriction requirement of November 16, 2005, Claims 1-47 are pending and Claims 48-54 are withdrawn from consideration. Applicant reserves the right to file a continuation application or take such appropriate action as deemed necessary to protect the non-elected inventions. Applicant does not hereby abandon or waive any rights in the non-elected inventions.

Claims 1, 22 and 44 have been amended to further clarify the claimed invention. Specifically, language has been added to specify that the claimed "sleeve" provides thermal insulation to the claimed light source. Support for these amendments is found at least on page 6, lines 22-30 of the Specification as originally filed. Claim 44 has been amended to correct an error in a previous amendment and to further characterize the element "transparent dielectric sleeve" as being a "transparent dielectric insulating sleeve." Support for this amendment is found at least on page 6, line 22-page 7, line 3 of the application as originally filed. With this amendment, no new material is added; acceptance is respectfully requested.

Rejection of Claims 1-47 under 35 U.S.C § 103(a)

Claims 1-47 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Zou et al. (U.S. Patent No. 6,186,649) ("Zou") in view of Northrop et al. (U.S. Patent No. 4,924,368) ("Northrop"), Ato (U.S. Patent No. 6,935,766), Murase et al. (U.S. Patent No. 5,408,387), or Yu et al. (U.S. Patent No. 6,979,112). Applicant respectfully disagrees with these rejections for the reasons set forth below.

Base Claims 1, 22 and 44 are directed to methods, apparatus and systems for emitting light through a planar surface. Embodiments of this invention include a light source surrounded by a transparent insulating sleeve, and the outer surface of the transparent insulating sleeve is in contact with a planar waveguide. Light emitted by the light source is transmitted through (i.e. from the inner surface through the outer surface of) the transparent insulating sleeve and directed through the planar waveguide, thus providing an illuminated planar surface (see Specification, page 2, lines 6-14). Claims 3 and 26 are directed further to a reflective surface that surrounds a

portion of the transparent insulating sleeve and reflects some of the emitted light into the planar waveguide. By providing a transparent insulating sleeve surrounding the light source, the planar waveguide and other items are less susceptible to the heat generated by the light source (see Specification, page 6, lines 14-21). As a result, the light source can be positioned closer to the planar waveguide, thereby allowing more light to be directed through the planar surface. The present invention provides improved illumination of a planar surface.

Zou et al. describes a system for providing linear illumination. In Fig. 8, florescent light 252/254 is partially enclosed by an enclosure 256, with a small opening 262 that allows light to escape (see Zou, column 8, lines 33-50). The enclosure 256 can be reflective, non-reflective or transparent (column 8, lines 41-43). If it is transparent, an additional reflective layer 258 is needed inside the enclosure, in order to ensure that light is transmitted through the opening 262 (column 8, lines 43-46). In addition, Fig. 9 describes a similar device with an “optical waveguide” 316 located near the opening 314.

Northrop et al. describes a protective shield for a florescent lamp. It is an object of Northrop et al. to provide a protective sleeve that does not break when the lamp breaks, thereby containing the broken lamp within the sleeve (Northrop, col. 2, lines 1-3 and 46-49). As shown in Figs. 1-3, a plastic sleeve 40 surrounds a florescent lamp 10. The plastic sleeve 40 is separated from the glass envelope 12 of the lamp 10 at a controlled distance (Northrop, col. 4, lines 61-62). If a sleeve is adhered directly to the lamp 10, then “the sleeve would tend to crack at the same place that the glass envelope cracked,” rendering it unable to contain the broken lamp 10 (Northrop, col. 4, lines 62-67). By separating the sleeve 40 from the lamp 10, the sleeve 40 can withstand destruction of the lamp. Northrop further discloses that the sleeve 40 should be of a “material/thickness... to have enough strength to withstand the collapsing of the lamp without the sleeve collapsing.” (Northrop, col. 3, lines 55-57).

Zou, alone or in combination with Northrop, does not teach or suggest the present invention as claimed in Base claims 1, 22 and 44. The Examiner is correct in stating that Zou does not disclose a flat panel luminaire apparatus including an insulating sleeve surrounding a light source, the sleeve being transparent and in contact with an edge of a planar waveguide. However, Northrop also fails to teach such a sleeve. As stated in Applicant’s original application (and Figs. 1A and 1B), an “insulating sleeve” pertains to a sleeve whereby “the

thermal energy transfer from light source 12 to reflector 18 or planar waveguide 16 is significantly reduced, preventing thermal damage to reflector 18 and planar waveguide 16” (see Specification, page 6, lines 22-30). Base claims 1, 22 and 44 have been amended to clarify that the claimed sleeve provides thermal insulation. Thus, in the present invention, the claimed insulating sleeve provides thermal insulation from the light source.

In contrast, Northrop discloses a protective sleeve for a florescent light that contains the light in the case of breakage. To accomplish this objective, Northrop describes a sleeve 40 made of requisite material, thickness, shape and distance from the lamp so as to withstand breakage of the lamp (Northrop, col. 3, lines 48-63 and col. 4, line 61-col. 5, line 4). No mention is made of the sleeve 40 being designed for insulation of the lamp 10, or having any purpose relating to insulation. Because Northrop describes a sleeve for merely protecting a lamp and containing debris, no indication or suggestion is made of a sleeve for insulating purposes.

Moreover, Zou does not teach a sleeve for the purpose of insulating a light source. Referring to Fig. 8 of Zou, the enclosure 256 is not a transparent insulating sleeve because it holds an additional reflective layer 258 that reflects light through the opening 264 (see Zou, column 8, lines 41-46). The enclosure 256 is not described as having any purpose for insulation; on the contrary, the enclosure 256 has a distinct purpose of directing light to a separate apparatus such as a wave guide. The sleeve of Northrop also has a distinct purpose of protecting a florescent light. As a result, one skilled in the art would find no suggestion in Zou or Northrop to use a transparent sleeve to insulate a florescent light, and allow the sleeve to make contact with a planar waveguide.

By way of contrast, a combination of the teachings of Zou and Northrop would result in a device that is distinct from the claimed invention. Such a device would include a linear illumination source as disclosed in Zou (see Zou Fig. 8) and further include a protective sleeve as disclosed in Northrop, which would contain the light source and (if the light source is destroyed) prevent it from escaping into the environment. Thus, neither Northrop nor Zou teach or suggest a transparent thermal insulating sleeve surrounding a light source in a flat panel luminaire apparatus, as claimed in base claims 1, 22 and 44. See the claim language “...a thermal insulating sleeve surrounding said light source, the sleeve being transparent...”; “a light source

in a transparent thermally insulating dielectric sleeve,” and “a transparent dielectric thermal insulating sleeve.”

Furthermore, Zou does not disclose a “reflector surrounding the outside of a substantial portion” of an insulating sleeve, as claimed (in the same or similar language) in previously presented claims 3 and 26. The Examiner states that Zou discloses a reflector 258 “surrounding the inside surface of sleeve 256.” However, claims 3 and 26 were amended in the Amendment filed May 31, 2006, adding the limitation of a reflector located at “the outside of... said insulating sleeve.” Thus, Zou does not disclose the invention as claimed in claims 3 and 26.

Regarding Base claim 44, Zou and Northrop fail to suggest the invention for the reasons stated above. Further, Ato describes a backlight unit for a liquid crystal display, and does not disclose at least “a transparent dielectric thermal insulating sleeve” as claimed. Therefore, Ato, alone or in combination with Zou or Northrop, does not teach or suggest the invention a claimed in base claim 44. Because claim 47 depends from base claim 44, the foregoing applies, and therefore claim 47 is not suggested by Ato, Zou and Northrop.

Dependent claims 2-21, 23-43 and 45-47 depend from one of base claims 1, 22 and 44 and thus the foregoing applies. As a result, the § 103 rejections of claims 1-47 cannot stand, and Applicant respectfully requests that the rejections be withdrawn.

Claims 4, 5, 8, 27 and 28 have been rejected under § 103 as being unpatentable over Zou in view of Ato. Claims 6, 7, 29, 30 and 31 have also been rejected under § 103 as being unpatentable over Zou in view of Ato. These claims depend from one of base Claims 1 and 22, and therefore the foregoing remarks apply. No combination of Zou and Ato discloses the claimed “thermal insulating sleeve” (“transparent thermally insulating dielectric sleeve”) of base Claims 1 and 22.

Claims 9, 10, 14, 15, 32, 33, 37 and 38 have been rejected under 35 U.S.C. § 103 as being unpatentable over Zou in view of Murase et al. These claims depend from one of base claims 1 and 22. Murase does not add to Zou the “thermal insulating sleeve” (“transparent thermally insulating dielectric sleeve”) of base Claims 1 and 22.

Claims 11, 12, 16, 34, 35 and 39 have been rejected under § 103 as being unpatentable over Zou. The above arguments with respect to base Claims 1 and 22 apply where Claims 11, 12

and 16 depend from Claim 1 and Claims 34, 35 and 39 depend from Claim 22. Zou makes no suggestion or disclosure of the claimed transparent thermal insulating sleeve of base claims 1 and 22. By way of their dependency, Claims 11, 12, 16, 34, 35 and 39 inherit the claimed transparent thermal insulating sleeve. Thus, Zou does not make obvious dependent Claims 11, 12, 16, 34, 35 and 39 and withdrawal of these § 103 rejections is respectfully requested.

Claims 13, 19, 36 and 42 are rejected under § 103 as being unpatentable over Zou in view of Yu et al. Yu discloses an acrylic waveguide with concave surfaces or grooves to provide a light incident surface that facilitates the entry of light into the waveguide. These claims depend from base Claims 1 and 22, and thus the foregoing remarks apply. Yu does not add to Zou the transparent “thermal insulating sleeve” of Claims 1 and 22, and therefore does not make obvious dependent Claims 13, 19, 36 and 42.

Claims 21, 24 and 25 have been rejected under § 103 as being unpatentable over Zou in view of Applicant’s admitted prior art (“APA”). The APA discloses a waveguide and light source as a self-contained unit for use with a display or picture frame. These claims depend from base Claims 1 and 22, and thus the foregoing remarks apply. Yu does not add to Zou the transparent “thermal insulating sleeve” of Claims 1 and 22, and therefore does not make obvious dependent Claims 21, 24 and 25.

Claims 44 and 47 have been rejected under § 103 in view of Zou et al., Ato and Northrup. As discussed above, none of these references individually or in any combination imply or suggest the “transparent dielectric thermal insulating sleeve” as claimed in base Claim 44. Claim 47 depends from Claim 44. Thus Zou in view of Ato and Northrup does not make obvious the claimed invention of Claims 44 and 47. Withdrawal of this rejection is respectfully requested.


Claims 45 and 46 have been rejected under § 103 as being unpatentable over Zou and Ato as applied to Claim 44. These claims depend from base Claim 44 and thus the foregoing applies. Ato does not add to Zou the “transparent dielectric thermal insulating sleeve” as claimed in base Claim 44, and therefore does not make obvious dependent Claims 45 and 46.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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